Energy demand and associated carbon emissions for Northumbria University estate: one School approach

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Content

- The drivers for carbon reduction in HE
- Carbon footprint methodology
- Carbon footprint results
- Producing “carbon-literate” graduates
- Future plans

External drivers

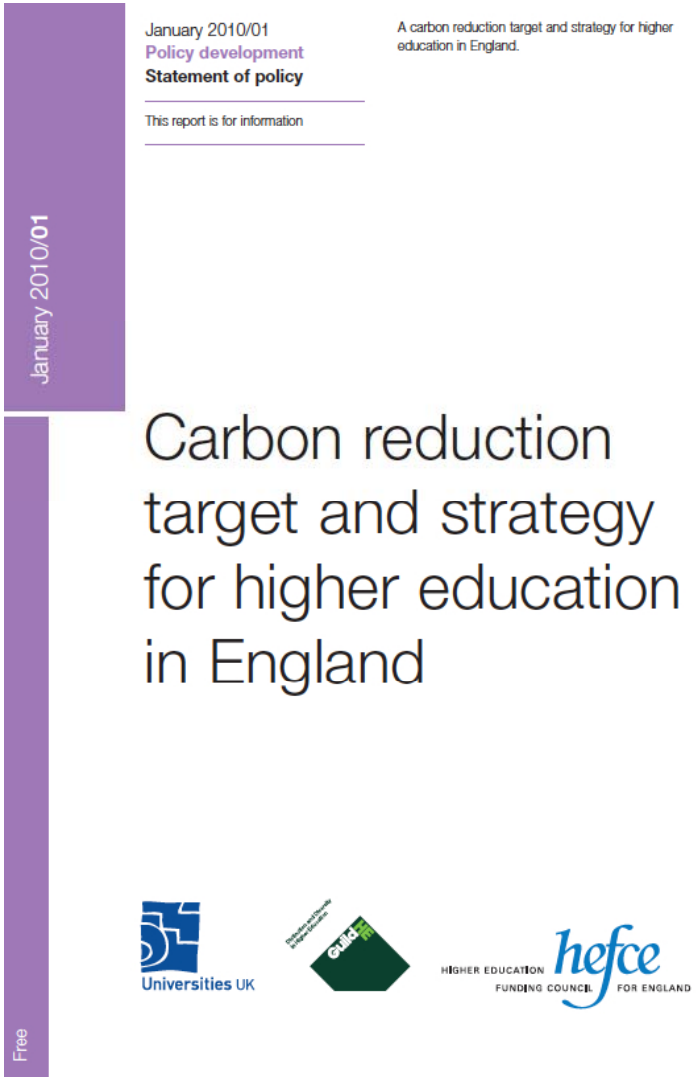
- EU emissions trading scheme
- Climate change levy
- Part L Building Regulations
- Display Energy Certificates (DECs)
- Carbon reduction commitment
- HEFCE

Sustainable development: our vision

Within the next 10 years, the higher education sector in this country will be recognised as a major contributor to society's efforts to achieve sustainability - through the skills and knowledge that its graduates learn and put into practice, and through its own strategies and operations.

Sustainable development in higher education (HEFCE 2005/28)

hefce


January 2010/01
January 2010/01
Policy development
Statement of policy
This report is for information
A carbon reduction target and strategy for higher education in England.
Carbon reduction target and strategy for higher education in England
Universities UK
HIGHER EDUCATION FUNDING COUNCIL FOR ENGLAND hefce
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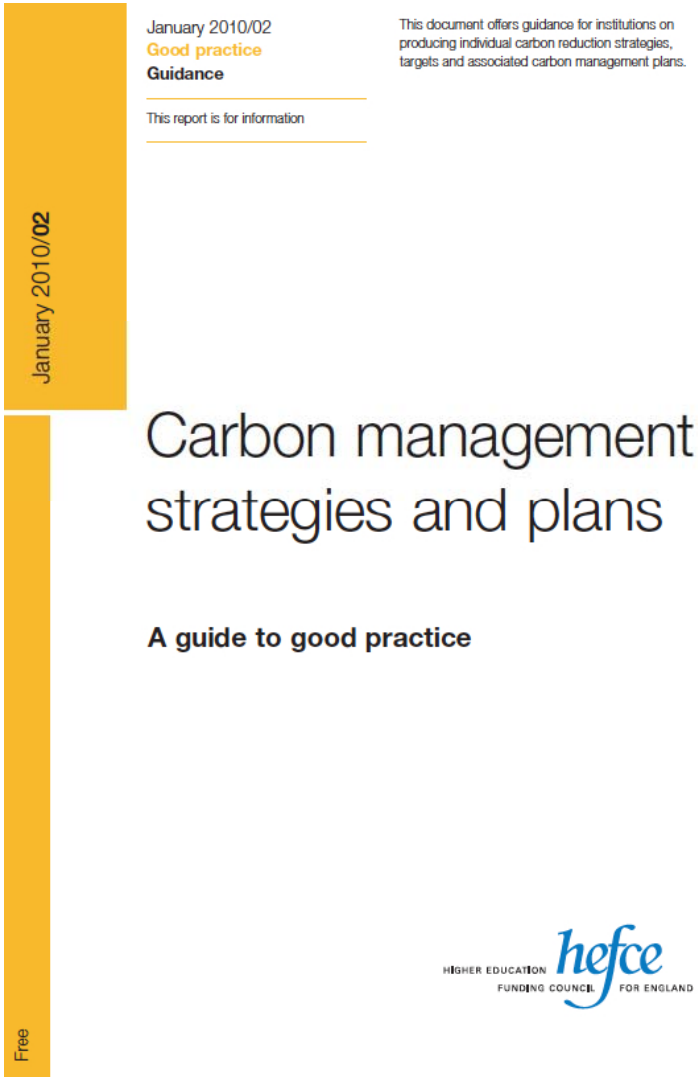
January 2010/02
January 2010/02
Good practice
Guidance
This report is for information
This document offers guidance for institutions on producing individual carbon reduction strategies, targets and associated carbon management plans.
Carbon management strategies and plans
A guide to good practice
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Internal drivers

- Cost
- Corporate Social Responsibility
- Competitiveness
- Environmental concern
- Access to capital
- Corporate image

The facts

35,000 students from 140 countries make Northumbria the UK's sixth largest HE provider and help the University to perform a leading role in promoting and sustaining the Region's economic, cultural, and social well-being.

(2009 figures)

The facts

Northumbria offers programmes in 30 of the 32 most popular academic disciplines across eight Schools:

- Arts and Social Sciences
- Built and Natural Environment
- Computing, Engineering and Information Sciences
- Design
- Health, Community and Education Studies
- Law
- Newcastle Business School
- Life Sciences

Carbon footprint methodology

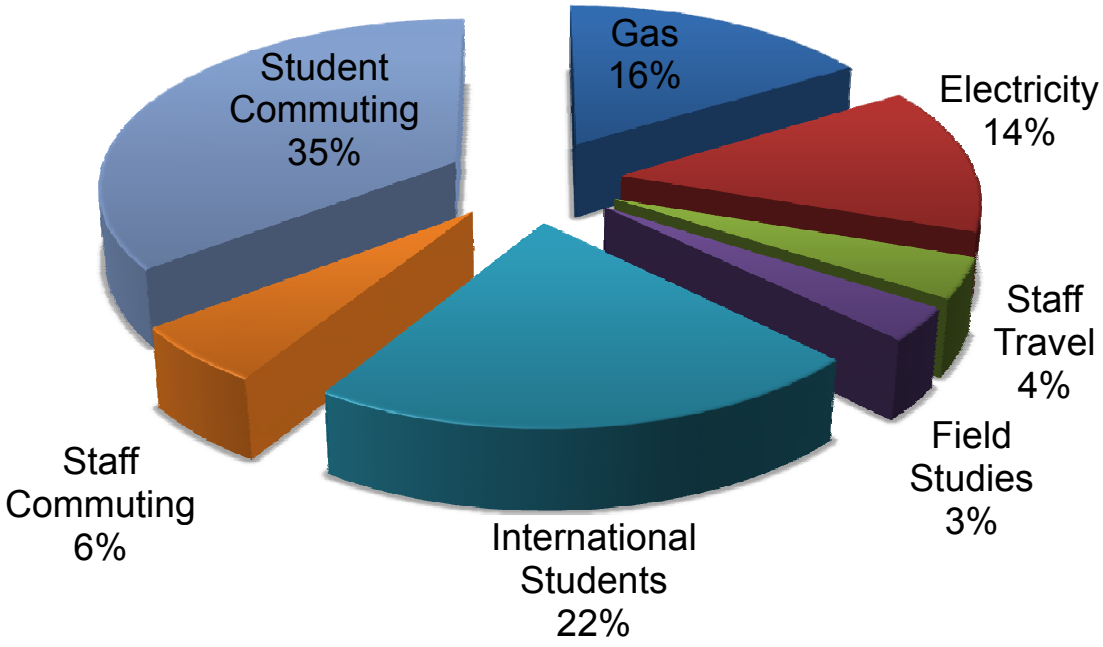
Gas and electrical consumptions have been obtained for Ellison Building and for Wynne Jones. The consumptions have been calculated initially on an area-weighted basis, using accurate CAD plans for the buildings and an estimate of the percentage of the total occupied by the School.

Staff (business) travel has been analysed for a full calendar month and broken down into car use, rail travel and air travel.

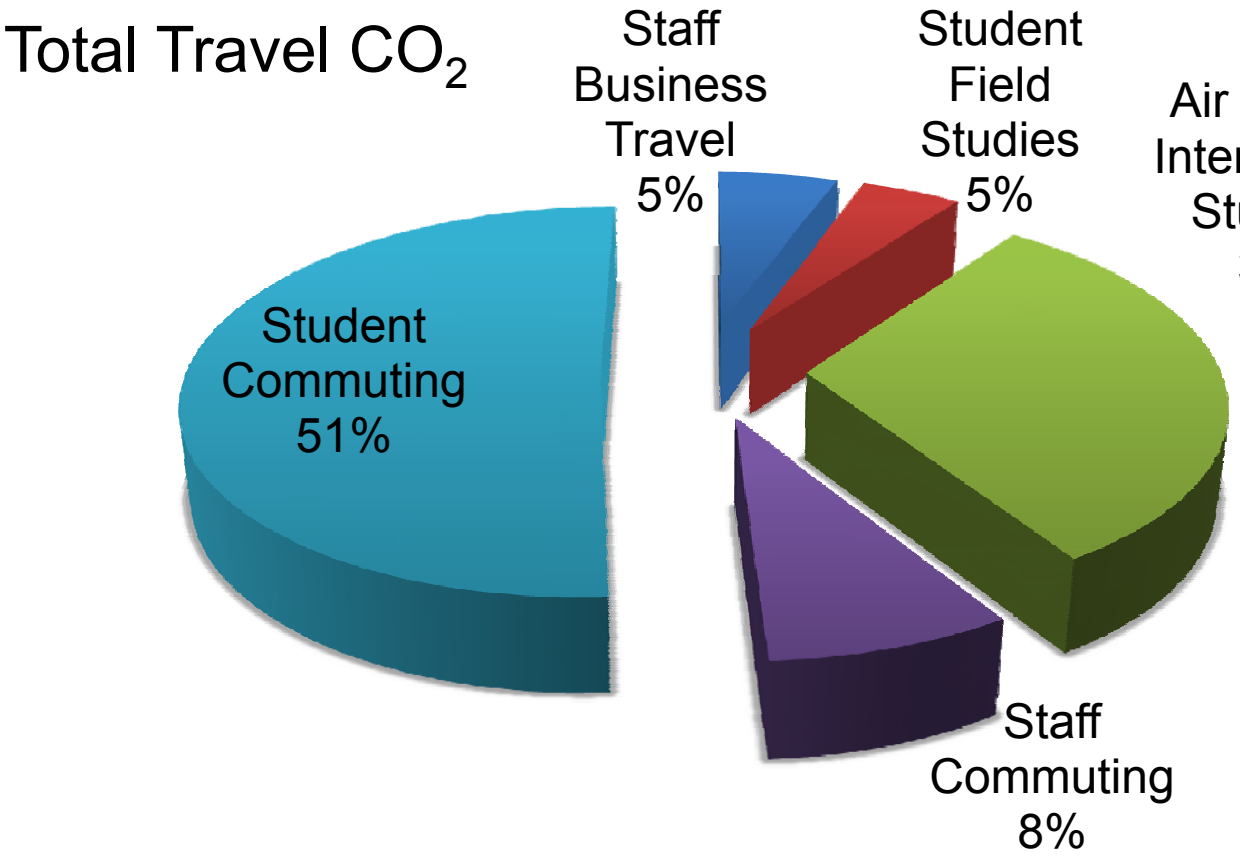
Estimates of staff and student commuting are based on actual numbers, modes of transport from commuter studies at both Northumbria and Newcastle Universities and estimates of travel distance. International student numbers have been obtained and CO_2 emission have been estimated based on home location and distance travelled by air.

School carbon footprint

School CO_2 breakdown



School carbon footprint



School carbon footprint

Typical CO_2 figures for universities vary between 400kg and 4000kg / student FTE per annum

Green Gown Awards 2010

School of the Built and Natural Environment ≈
1 tonne CO_2 / student FTE per annum

Procurement

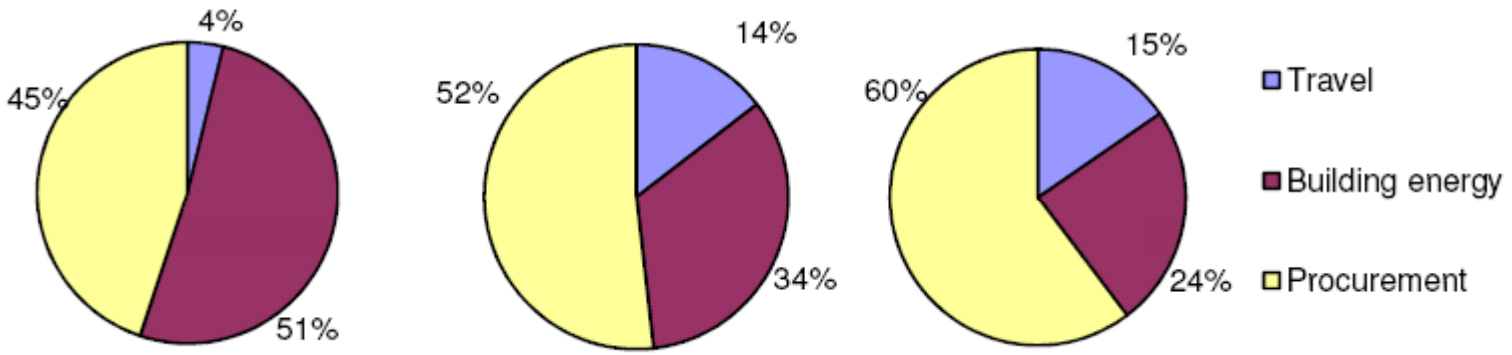


Figure 1: 2007 BLT (LHS); London NHS Trusts (Middle) and NHS England (RHS) footprint breakdown

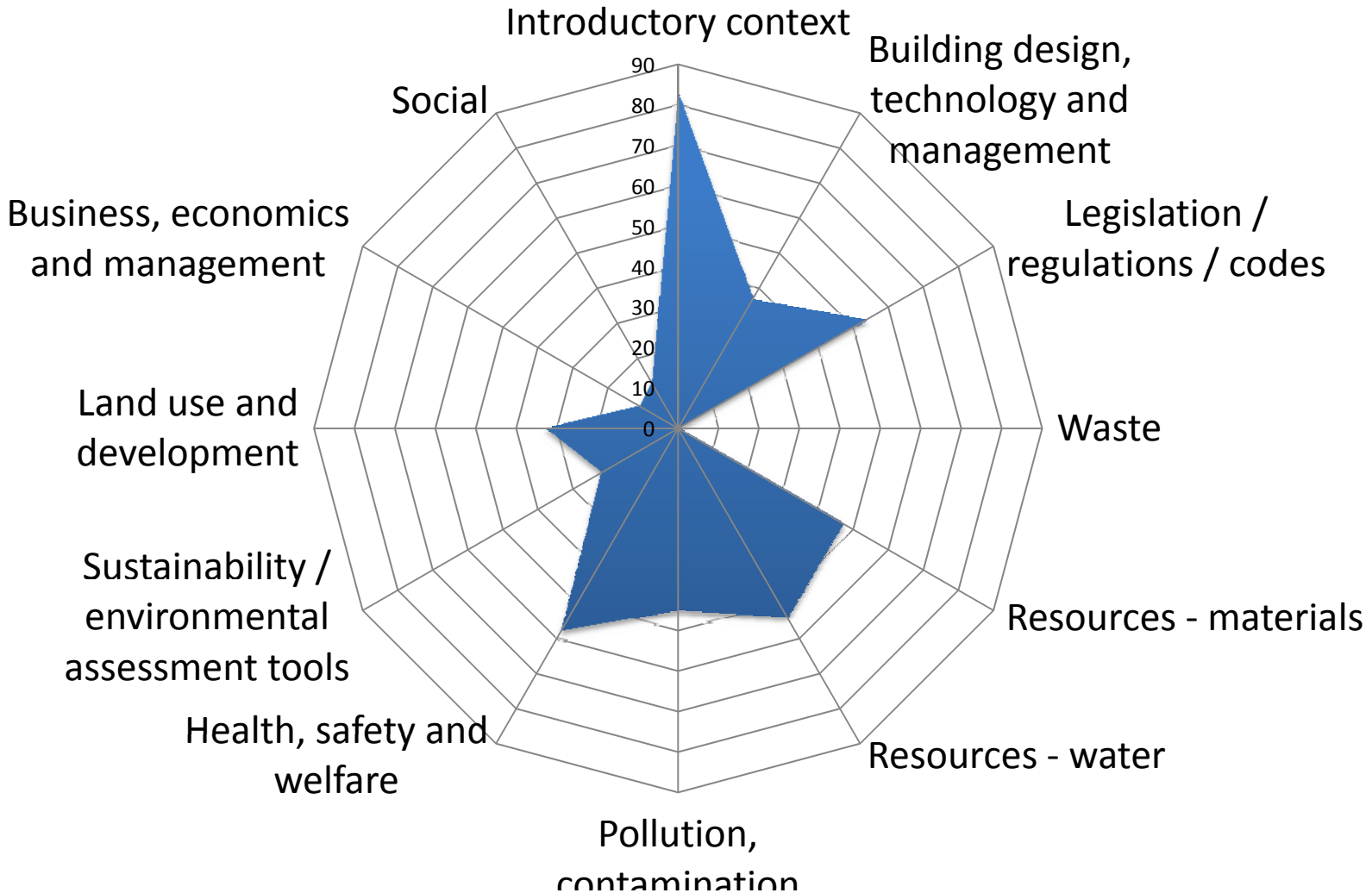
Arup et al (year unknown). Executive summary: Barts & the Royal London NHS Trust 2007 carbon footprint

Study of carbon footprint for Barts & the Royal London NHS Trust showed that procurement contributed 45% of the carbon footprint

School data on procurement is very limited.

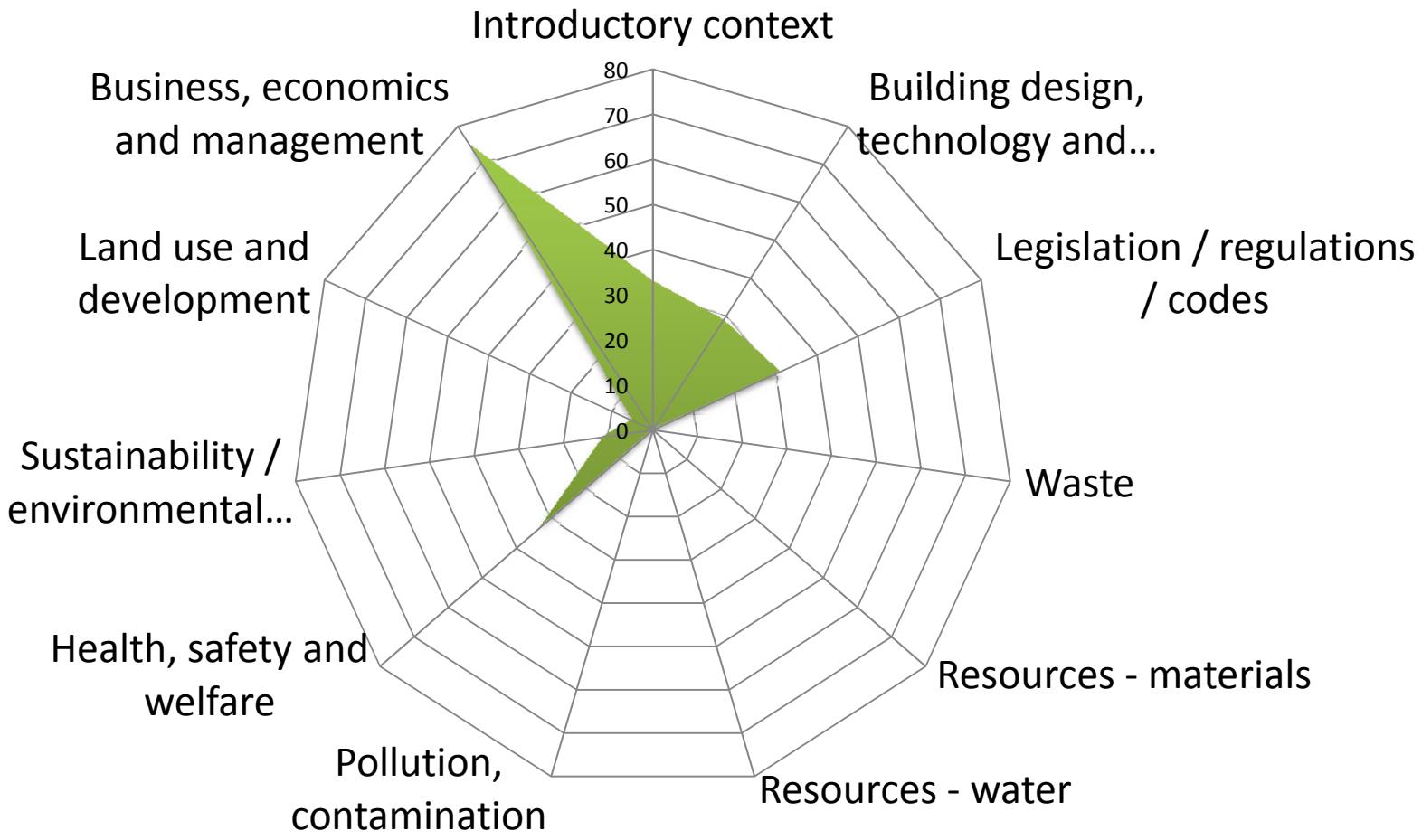
Curriculum mapping

Building Surveying



Curriculum mapping

Quantity Surveying

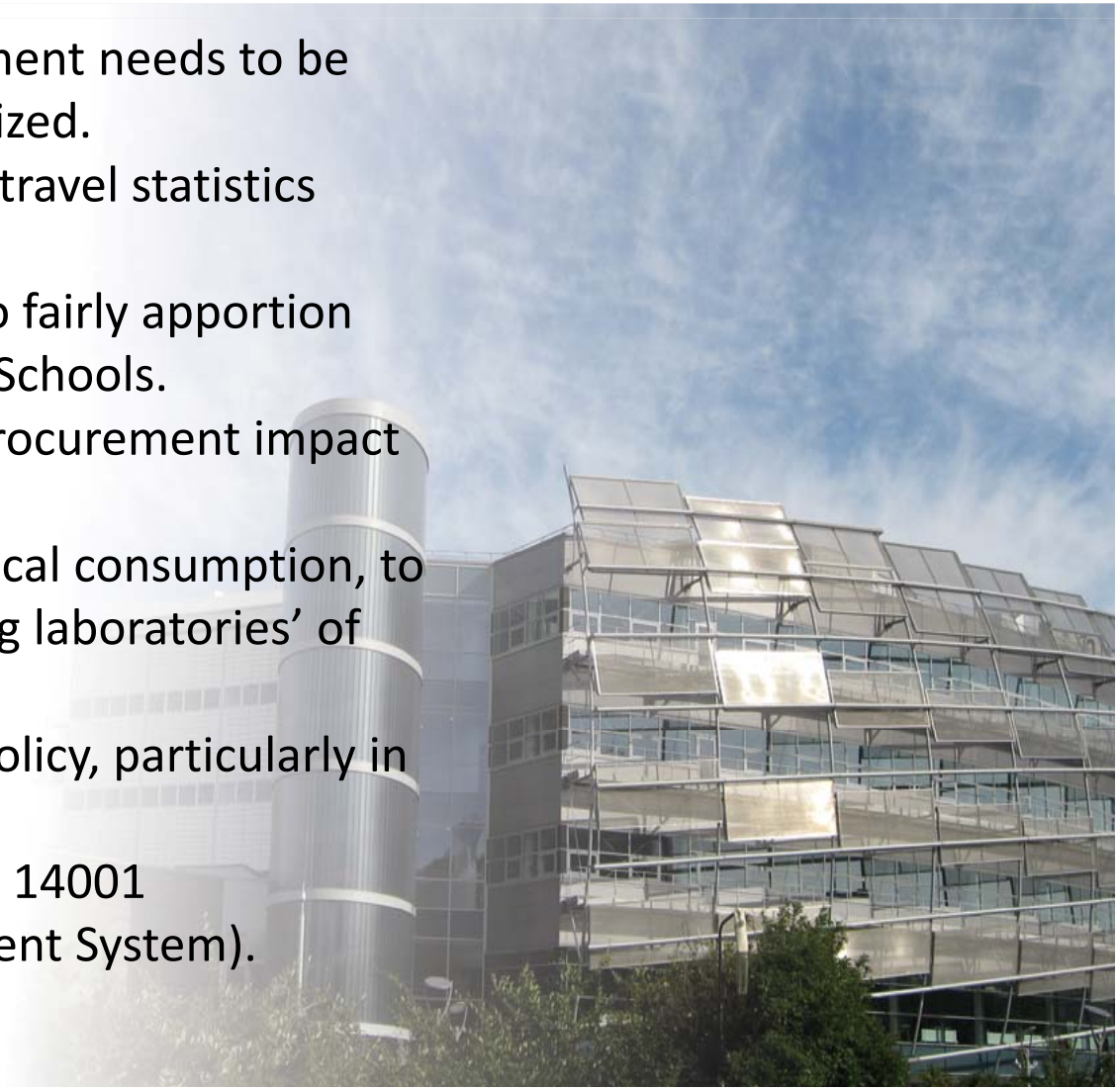


The University policy

There has been recent agreement by the Governors to the University's revised Carbon Management Plan. This commits the university to a 32% reduction in carbon emissions by 2020, based on 2005 values.

The plan requires a Sustainability Management Group and a "*culture shift for the University and commitment from staff at all levels of the organisation*".

The School policy



- Carbon footprint assessment needs to be updated and better publicized.
- More robust University travel statistics needed in the future.
- Methodology needed to fairly apportion “overheads” emissions to Schools.
- More investigation of procurement impact needed.
- Benchmarking of electrical consumption, to provide live data and ‘living laboratories’ of energy consumption.
- Aim to develop waste policy, particularly in relation to paper.
- Aspiration to obtain ISO 14001 (Environmental Management System).

Summary

- Internal and external drivers
- Carbon footprint methodology complex, estimations at present, some data missing
- School results approx 1 tonne CO_2 /student FTE per year
- Some way to go regarding curriculum
- University target 32% reduction